Topic 01 – Coronary heart disease

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001

Temporal trends in pre-hospital management of ST segment elevation myocardial infarction from 2002 to 2010: Data from the RICO Survey (Observatoire des Infarctus de Cote d'Or)

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Background: Myocardial infarction with ST segment elevation (STEMI) is a medical emergency requiring specific management aiming to achieve reperfusion as early as possible.

Aims: We aimed to evaluate the temporal trends between 2002 and 2010 in STEMI management and time delays in an eastern region of France (Cote d'Or).

Methods: All consecutive patients admitted for a first STEMI in the RICO survey (Observatoire des Infarctus de Côte d'Or) from 1st January 2002 to 31st december 2010 have been included. We analysed trends in pre-hospital and hospital management times and reperfusion.

Results: 4114 STEMI patients were included over the study period. Mean age and GRACE risk score increased from 2002 to 2010 (64 to 67 y, p=0,001 and 152 to 155 p=0,049). At symptom onset, there was an increase in the rate of patients who called the emergency number (dial 15) and a decrease in the rate of call to GP as first medical contact (from 24.8 to 39.4% and from 57.1 to 34.2%, respectively). However, prehospital times including patient time (from onset of symptoms to call for medical seeking) remained stable over time. There was a significant difference in time to first medical contact according to age, with patients aged under 50 years getting help on average 40 to 100 minutes earlier than patients aged over 50 years. (p=0.019). The average time from first medical contact to reperfusion decreased significantly from 339 minutes in 2002 to 239 minutes in 2010 (p=0.009). Over the study period, there was an inversion in the distribution of reperfusion strategies, with a decrease in fibrinolysis and an increase in primary PCI (from 35% to 27% and from 23.1 to 36.7%, respectively). The rate of patients without acute reperfusion dropped from 41,9 to 36,3% (p<0,001). We found a marked improvement in time to reperfusion including fibrinolysis and door to balloon time (from 150 to 120 min and from 70 to 45 min, respectively).

Conclusion: Between 2002 and 2010, despite marked improvements in management including reperfusion strategies, there is still a room for improvement in order to achieve earlier reperfusion in STEMI patients.

002

Socio-professional status as a major determinant of disparities in cardiovascular outcomes: contemporary data on the prognosis of workmen after an acute myocardial infarction

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Introduction: Over the last decade in France, early prognosis after acute myocardial infarction (AMI) markedly improved. However, recent works suggest persistent socioeconomic disparities in outcomes after AMI. From a regional population-based study, we aimed to analyze the prognosis of workmen after AMI.

Patients: Patients enrolled in the *ObservatoiRe des Infarctus du myocarde de Côte d'Or* (RICO) between 2001 and 2011, <65 y, with current occupational activity and follow-up at one year. Socio-professional categories (SPC) were collected according to INSEE definition. The primary endpoint combined mortality and hospitalization for heart failure.

Results: Among the 1671 patients included during the study period, 403 (24%) were workmen. Mean age was 50.8 years, 85% were male and 50% had ST segment elevation MI (STEMI). Although workmen have more favorable pattern of risk factors, the rate of combined endpoint was 3 fold higher among workmen vs other SPC (7.9% vs 2.6%). Multivariate analysis showed that workmen remain strongly associated with worse prognosis, even after adjustment for confounding (OR (95%CI): 3.22(1.44-7.17)).

Conclusion: This large contemporary study showed that the medium-term prognosis of workmen after an AMI is still worse than other SPC in France. Socio-professional status is an important determinant of population health and cardiovascular outcomes and may account for some of the heterogeneity in outcomes for patients hospitalized with AMI.

003

Acute hyperglycemia is associated with adverse clinical and angiographic outcome after angioplasty for acute myocardial infarction with ST elevation

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Background: Hyperglycemia has been shown to be a powerful predictor of worse outcome after ST segment-elevation myocardial infarction (STEMI).

The aim of this study was to investigate the relation between acute hyperglycemia and angiographic and clinical outcome after primary or rescue angioplasty for STEMI.

Methods: We prospectively included 383 patients who underwent revascularization for STEMI: 332 primary angioplasty and 51 rescue angioplasty, Plasma glucose was measured at hospital admission. Acute hyperglycemia (HG) was defined as plasma glucose of 11 mmol/L, regardless of the diabetic status.

Results: Among the 383 patients with STEMI included in the study, 158 (41.2%) patients had acute hyperglycemia. There was no difference among the two groups with regard to clinical characteristics, cardiovascular risk factors and hemodynamic parameters. Angioplasty success, TIMI 3 flow and ST segment resolution were significantly lower in acute HG group. On multivariate regression, HG wasn't found to be an independant predictor of angioplasty success (p=0.08; OR=0.9; 95%IC [0.92-1]) or of ST resolution, however diabetes was independently associated with ST segment resolution after achieving TIMI 3 flow (OR= 3.2; 95% CI [1.02 – 8.1]; p=0.014). Acute hyperglycemia (OR: 3.8; p=0.005) was found to be an independent predictor of in-hospital mortality in multivariate analysis. Among the HG patients, mortality predictors were: glycemia level (OR=1.13; 95%CI [1.03-1.23]; p=0.005), Killip class (OR: 2.14; 95% CI [1.36 – 3.35]; p=0.001), blood hemoglobin level (OR: 0.69; 95%CI [0.53 – 0.9]; p=0.007), and angioplasty success (OR: 0.25; 95%CI [0.08-0.82]; p=0.022).

Conclusion: Acute hyperglycemia in patients with STEMI is an important predictor of mortality with an increasing mortality risk even beyond 11 mmol/L but diabetes is a better predictor of ST resolution after TIMI 3 restoring. This suggests the usefulness of assessment of glycemic metabolism in the setting of reperfusion for acute myocardial infarction and the beneficial effect of strict glycemic control.